UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,358	10/02/2003	Karine Vidal	88265-6852	8288

29157 7590 07/28/2005

BELL, BOYD & LLOYD LLC
P. O. BOX 1135
CHICAGO, IL 60690-1135

EXAMINER	
KAM, CHIH MIN	
ART UNIT	PAPER NUMBER
1656	

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/676,358	VIDAL ET AL.	
	Examiner	Art Unit	
	Chih-Min Kam	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-18* is/are pending in the application.

4a) Of the above claim(s) *12-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-11, 17 and 18* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. Claims 1 and 3-18 are pending.

Applicants' amendment filed May 04, 2005 is acknowledged. Applicant's response has been fully considered. Claims 1 and 3 have been amended, claim 2 has been cancelled, and new claims 17 and 18 have been added. Claims 12-16 are non-elected inventions and withdrawn from consideration. Therefore, claims 1, 3-11, 17 and 18 are examined.

Withdrawn Objection

2. The previous objection to Fig. 6 and Fig. 7 is withdrawn in view of newly submitted Figs. 6, 7A and 7B, filed May 04, 2005, and applicant's response at page 8 in the amendment filed May 04, 2005.

Withdrawn Claim Objection

3. The previous objection to claim 3 is withdrawn in view of applicants' amendment to the claim, and applicant's response at page 8 in the amendment filed May 04, 2005.

Withdrawn Claim Rejections - 35 USC § 102

4. The previous rejection of claims 1 and 2 under 35 U.S.C. 102(b) as being anticipated by Simonet *et al.* (Cell 89, 309-319 (1997)), is withdrawn in view of applicants' cancellation of the claim, and applicant's response at page 8 in the amendment filed May 04, 2005.

5. The previous rejection of claims 1, 3, 6-8 and 10 under 35 U.S.C. 102(b) as being anticipated by Simonet *et al.* (WO 99/53942), is withdrawn in view of applicants' amendment to the claim to require glycosylation difference for osteoprotegerin, and applicant's response at page 9 in the amendment filed May 04, 2005.

6. The previous rejection of claims 1, 3, 4, 6-8, 10 and 11 under 35 U.S.C. 102(b) as being anticipated by Boyle *et al.* (U.S. Patent 6,015,938), is withdrawn in view of applicants' amendment to the claim to require glycosylation difference for osteoprotegerin, and applicant's response at page 9 in the amendment filed May 04, 2005.

Maintained Informalities

The disclosure is objected to because of the following informalities:

7. The previous objection to the specification regarding "SEQ ID NO:" is maintained because Fig. 6 describes the amino acid sequence of SEQ ID NO:6, and Figs. 7A and 7B describe SEQ ID NO:1 (amino acid sequence) and SEQ ID NO:7 (nucleotide sequence), however, the description of these drawings does not cite the corresponding "SEQ ID NO:". Appropriate correction is required. The amendment to pages 10 and 13 of the specification to add "SEQ ID NO:" to the nucleotide sequence is acknowledged.

8. The brief description of Fig. 7 is objected to because the drawing of Fig. 7 has been changed to Figs. 7A and 7B in the amendment filed May 04, 2005, but the description remains for Fig. 7. Appropriate correction is required.

9. The specification indicates the sequence of a PGEM-T OPG clone is shown in Figure 6 (page 13, line 13), which should be Figure 7; and the protein encoded by this plasmid is shown in Figure 4 (page 13, line 19), which should be Figure 6. Appropriate correction is required.

Objection to the Specification

10. The specification cites "The OPG of the present invention, i.e. in a form obtainable from milk source, has a polypeptide sequence as identified by SEQ ID. No. 1 and exhibits sizes of about 80, 130 and 200 kDa, respectively, which differs from that obtained by recombinant means

(i.e., 55 kDa)." at page 5, lines 8-10 (see also page 12, lines 11-13). However, Fig. 2, the Western blot analysis of human milk fractions under reduced conditions using 10% SDS-gel (page 9, lines 19-25), only shows the band of 130 kDa for various milk fractions containing OPG, it does not show the bands of 80 and 200 kDa for these milk fractions, nor indicates the band of 55 kDa for recombinant OPG. Appropriate clarification is required.

New Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1, 3-7, 11 and 17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim is drawn to osteoprotegerin obtainable from human or bovine milk or colostrum. As written, the claim does not explicitly indicate the hand of man. Insertion of "isolated" or "purified" in connection with osteoprotegerin is suggested provided that support for such an amendment can be identified in the specification as originally filed. See MPEP § 2105. Claims 3-7 and 11 are included in the rejection because they are dependent on a rejected claim and do not correct the deficiency of the claim from which they depend.

New Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 1 and 3-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 3-11 are directed to osteoprotegerin obtainable from human or bovine milk or colostrums, wherein the osteoprotegerin includes a glycosylation pattern giving rise to a polypeptide having a molecular weight of approximately 80, 130 and 200 kDa (claims 1 and 3); a food material, an enteral composition or a pharmaceutical composition comprising the osteoprotegerin (claims 4-7 and 11); or a method of making a food material, an enteral composition or a pharmaceutical composition by adding the osteoprotegerin (claims 8-10). While the specification cites the OPG of the present invention, i.e. in a form obtainable from milk source, has a polypeptide sequence as identified by SEQ ID NO: 1 and exhibits sizes of about 80, 130 and 200 kDa, respectively, which differs from that (i.e., 55 kDa) obtained by recombinant means (see page 5, lines 8-10; page 12, lines 11-13), it does not demonstrate the OPG obtainable from various milk fractions has a molecular weight of about 80, 130 and 200 kDa (see the bands in Fig. 2). The specification only shows a band of molecular weight of about 130 kDa for various milk fractions, and there is no 55 kDa band for recombinant OPG in the western blot (Fig. 2). The lack of description for the osteoprotegerin obtainable from human or bovine milk or colostrums and having a glycosylation pattern giving rise to a polypeptide having a molecular weight of approximately 80, 130 and 200 kDa as encompassed by the claims, applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise

terms that a skilled artisan would not recognize applicants were in possession of the claimed invention.

New Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 8-10 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8-10 and 18 are indefinite because the claim lacks method steps in the process of making a food material, an enteral composition or a pharmaceutical composition. The missing step is to what the osteoprotegerin is added. Claims 9-10 are included in this rejection for being dependent on a rejected claim and not correcting the deficiency of the claim from which they depend.

New Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1, 4-7, 11 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by D'Ostilio *et al.* (Clinical and Experimental Immunology 104, 543-546 (June 1996)) as evidenced by US 2004/0137074.

D'Ostilio *et al.* teach human breast milk samples were obtained from eight healthy mothers, and milk samples were collected on days 1-6 post-partum and 1 month after delivery. (page 543, right column). Since the reference teaches using the same source (i.e., human breast milk from healthy mothers; claims 1, 4-7, 11 and 17) for naturally occurring osteoprotegerin as the instant application (see US 2004/0137074, paragraph [0048]), it would be expected that human breast milk in the reference inherently contains the same compound as the instant application, which meets the criteria of the claimed invention.

New Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claim 3 is rejected under 35 U.S.C. 102(b) as anticipated by D'Ostilio *et al.* (Clinical and Experimental Immunology 104, 543-546 (June 1996)) or, in the alternative, under 35 U.S.C. 103(a) as obvious over D'Ostilio *et al.* and Simonet *et al.* (WO 99/53942).

D'Ostilio *et al.* describes the naturally occurring osteoprotegerin as stated in paragraph 14. Since D'Ostilio *et al.* teach using the same source (i.e., human breast milk from healthy mothers) for naturally occurring osteoprotegerin as the instant application (see US

2004/0137074, paragraph [0048]), human breast milk in the reference, which inherently contains the same compound (the peptide of SEQ ID NO:1), anticipates the claimed sequence. Alternatively, the OPG/OCIF sequence may have Asp instead of Ala at the amino acid residue 242 of the mature OPG (see page 13, lines 14-17 of the specification), but Simonet *et al.* disclose human OPG has an amino acid sequence having 100% sequence identity to the claimed SEQ ID NO:1 (having Ala at residue 242). In view of D'Ostilio *et al.* and Simonet *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the references disclose human breast milk contains the amino acid sequence of SEQ ID NO:1 for the naturally occurring osteoprotegerin because the sequence taught by Simonet *et al.* represents a human OPG.

In the absence of evidence to the contrary, the teachings of D'Ostilio *et al.* or D'Ostilio *et al.* and Simonet *et al.* appear equivalent to the osteoprotegerin of claim 3 which refer to specific amino acid sequence. Since the Office does not have the facilities for examining and comparing applicants' protein with the protein of the prior art, the burden is on the applicants to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the protein of the prior art does not possess the same material structural and functional characteristics of the claimed protein). See In re Best, 562 F.d. 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Conclusion

16. No claims are allowed.

Examiner's Comment

The Examiner notes Simonet *et al.* (WO 99/53942) and Boyle *et al.* (U.S. Patent 6,015,938) teach the amino acid sequence of osteoprotegerin which has 100% sequence identity to the claimed SEQ ID NO:1. However, the rejection of claim 3 is withdrawn because of the amendment to the claim to require glycosylation difference for the sequence of SEQ ID NO:1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Min Kam whose telephone number is (571) 272-0948. The examiner can normally be reached on 8.00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr can be reached at 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chih-Min Kam, Ph. D. CMK

Patent Examiner

CMK

July 14, 2005

KATHLEEN M. KERR, PH.D.
SUPERVISORY PATENT EXAMINER